Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1-19. (Canceled)

20. (Previously Presented) A method of controlling a blood pump, comprising:

receiving, in a controller, a flow signal from an implanted flow sensor, the flow signal indicative of an instantaneous flow waveform;

analyzing the flow waveform in both the time domain and frequency domain; and

outputting, from the controller, a control signal to control an implanted blood pump in response to the analysis of the flow waveform.

21. (Previously Presented) The method of claim 20, in which the analysis of the flow waveform determines a suction boundary condition.

22. (Previously Presented) The method of claim 21 where the boundary condition becomes control parameters for closed loop control.

23. (Previously Presented) The method of claim 21 where the boundary condition causes the control system to limit pump speed, and where upper boundary conditions do not allow the speed to be increased further while lower boundary conditions do not allow the speed to be decreased further.

24. (Previously Presented) The method of claim 21 where the boundary condition causes a predetermined decrease in speed then periodically attempts to return to the desired control mode at predetermined intervals.

25. (Previously Presented) The method of claim 20, in which the analysis of the flow waveform determines boundary conditions for suction, maximum power, maximum speed, minimum speed, minimum flow, change in flow peak-to-peak amplitude over change in pump speed, change in mean flow over change in pump speed, and change in pump power over change in pump speed.

26. (Previously Presented) The method of claim 20 where a fail-safe feature to switch to a Constant Speed mode is automatically enabled in the event the flow signal is lost, erroneous, or compromised.

27. (Previously Presented) The method of claim 26 where the quality of the flow signal is determined by the frequency domain analysis of the real-time flow waveform.

28. (Previously Presented) The method of claim 20 wherein the control signal from the controller is adapted to a patient's individual physiology in response to speed variations.

29. (Previously Presented) The method of claim 20 further comprising analyzing the flow waveform based on both instantaneous and mean values.

30. (Previously Presented) The method of claim 20 wherein the control signal from the controller is adapted to a patient's individual physiology in response to suction detection events.

31. (Previously Presented) The method of claim 20 wherein, in addition to controlling the implanted blood pump in response to the analysis of the flow waveform, the controller provides at least one alternative control mode selected from the group comprising - constant speed, constant flow, and constant peak-to-peak amplitude.